CLAIMS

What is claimed is:

1. An apparatus for continuously providing dampening fluid to a rotating plate cylinder of a lithographic printing press comprising:

(a) a printing press;

(b) a dampening fluid reservoir operatively connected to said printing press, for supplying said dampening fluid to be provided to said rotating plate cylinder;

(c) a pan roller rotatably mounted, operatively connected to said printing press and disposed adjacent to said dampening fluid reservoir, for receiving said dampening fluid therefrom;

(d) a transfer roller means, operatively connected to said printing press, tangentially contacting and parallel to said pan roller;

(e) an ink receptive oscillating roller, operatively connected to said printing press, tangentially contacting and parallel to said transfer roller means, said oscillating roller being coupled to said rotating plate cylinder through a gear mechanism for rotating said oscillating roller at a surface speed proportional to a surface speed of said rotating plate cylinder and having a compressible surface; and

(f) a form roller rotatably mounted, operatively connected to said printing press, tangentially contacting and in a parallel relation to both said plate cylinder and said ink receptive oscillating roller for carrying an even metered layer of dampening fluid from said oscillating roller to said plate cylinder.

2. An apparatus, as in Claim 1, wherein said ink receptive oscillating roller further comprises a polymeric surface having a hardness measuring between about 95 to 100 Shore A Durometer.

3. An apparatus, as in Claim 1, wherein each of said pan roller and transfer roller and water form roller have ink receptive polymeric surfaces.

4. An apparatus as in Claim 1 wherein said transfer roller means comprises:

(a) a transfer roller contacting said pan roller; and

(b) a reverse direction roller contacting said transfer roller and said oscillating roller.

5. An apparatus, as in Claim 1, wherein said pan roller further comprises a gear drive, operatively connected for rotating said pan roller at a surface speed proportional to a surface speed of said rotating plate cylinder.

6. An improved oscillating roller for use in a fluid dampening system of a lithographic press comprising:

(a) a rotatable ink receptive and compressible exterior cylindrical surface having a hardness of about 90 to 100 Shore A Durometer;

(b) a drive gear operatively connected to said oscillating roller for directly driving said rotatable exterior cylindrical surface at a surface speed equal to a surface speed of a rotating plate cylinder of said lithographic press; and

(c) an external oscillating mechanism operatively connected to said oscillating roller for driving said rotatable ink receptive exterior surface thereof with oscillating axially linear motion while said ink receptive exterior cylindrical surface is also being rotated by said drive gear.

7. An improved gear driven continuous fluid dampening system of the type having a plurality of tangentially contacting and parallel cylindrical rotatable rollers structurally held in relationship to each other and having a dampening fluid pan, said plurality of rotatable rollers comprising:

(a) a pan roller positioned for receiving dampening fluid from said dampening fluid pan with an ink receptive polymeric surface having a hardness of about 95 to 100 Shore A Durometer;

(b) a transfer roller positioned for receiving dampening fluid from said pan roller with an ink receptive polymeric surface having a hardness of about 25 to 40 Shore A Durometer;

(c) a reverse direction roller for receiving dampening fluid from said transfer roller with an ink receptive polymeric surface having a hardness of about 25 to 40 Shore A Durometer and which is different from the predetermined hardness of the transfer roller;

(d) an oscillating roller positioned for receiving dampening fluid from said reverse direction roller, and said dampening system further comprising;

(e) an ink receptive and compressible surface on said oscillating roller having a hardness of about 95 to 100 Shore A Durometer;

(f) a gear train driving said oscillating roller for rotation thereof at speeds directly proportional to said rotation of said plate cylinder;

(g) means for selectively applying desired rolling contact forces both between said oscillating roller and said reverse direction roller and between said oscillating roller and said form roller; and

(h) a form roller with an ink receptive polymeric surface having a hardness of about 25 to 30 Shore A Durometer for receiving dampening fluid from said oscillating roller and for providing said dampening fluid to a rotating plate cylinder of a lithographic printing press.

8. An improved fluid dampening system, as in Claim 7, wherein said ink receptive surface of said oscillating roller comprises a smooth polymeric material with substantially uniform porosity.

9. An improved fluid dampening system, as in Claim 8, wherein said smooth polymeric material is rubber, having a hardness measurement of 95 to 100 Shore A Durometer and having resilient compressibility characteristic of rubber having said hardness.

10. A kit for retrofitting an existing lithographic printing press with a dampening system which continuously provides dampening fluid with improved metering capabilities, said retrofitting kit comprising:

(a) a replacement gear driven oscillating roller with an ink receptive porous cylindrical surface; and

(b) a replacement pan roller, transfer roller, and reverse direction roller set including means for adjusting contact pressure between said pan roller and said transfer roller of said set and between said reverse direction roller of said set and said oscillating roller.

11. A method of retrofitting an existing lithographic printing press with a dampening system which continuously provides dampening fluid with improved metering capabilities, comprising the steps of:

(a) replacing an existing metallic or chrome plated gear driven oscillating roller with an ink receptive gear driven oscillating roller having a porous surface; and

(b) replacing existing pan and transfer rollers with a pan and transfer roller set including means for adjusting contact pressure between a pan roller and a transfer roller of said

replaced set and between a reverse direction roller of said replacement set and said ink receptive gear driven oscillating roller.

12. An apparatus, as in Claim 2, wherein said absorbent polymeric surface of said ink receptive oscillating roller is characterized in that it is able to absorb a mixture of ink and dampening fluid to a depth of about 1 mm to 5 mm.

13. An apparatus, as in Claim 1, wherein said ink receptive oscillating roller is sufficiently porous so that dampening fluid penetrates to a depth of about 1 mm to 5 mm.

14. An apparatus for continuously providing dampening fluid to a rotating plate cylinder of a lithographic printing press, of the type having an existing gear-driven oscillating roller and a form roller in contact with said existing oscillating roller and said rotating plate cylinder, as part of an existing dampening system for said lithographic printing press, said apparatus comprising:

(a) a frame, having means for connection to said printing press;

(b) a dampening fluid reservoir having means for connection to said lithographic printing press;

(c) a pan roller, rotatably mounted in said frame and disposed adjacent to said dampening fluid reservoir for receiving dampening fluid therefrom;

(d) a transfer roller means, rotatably mounted in said frame, so that it tangentially contacts, and is parallel to, said pan roller for receiving dampening fluid therefrom;

(e) an ink receptive replacement oscillating roller attachable to said lithographic printing press, contacting and parallel to said transfer roller means, said replacement oscillating roller having a gear, which gear is sized and shaped for coupling to said rotating plate cylinder through a gear mechanism so that said replacement oscillating roller is rotated at a surface speed which matches a surface speed of said rotating plate cylinder, and having a resiliently compressible surface for tangentially contacting both said transfer roller means and said form roller so that an even, metered layer of dampening fluid is provided from said oscillating roller to said form roller, and in turn, to said plate cylinder.

15. An apparatus, as in Claim 14, wherein said replacement ink receptive oscillating roller further comprising an absorbent polymeric surface, having a hardness measuring between about 95 to 100 Shore A Durometer.

16. An apparatus, as in Claim 15, wherein said absorbent polymeric surface of said replacement ink receptive oscillating roller is characterized in that it is able to absorb a mixture of ink and dampening fluid to a depth of about 1 mm to 5 mm.

17. An apparatus, as in Claim 14, wherein said replacement ink receptive oscillating roller is sufficiently porous so that dampening fluid penetrates to a depth of about 1 mm to 5 mm.